

LECTURER: MARTHA DANSO
PROGRAMME: 4-YEAR B.ED. (TECHNOLOGY EDUCATION)
COURSE: WELDING & FABRICATION
CODE: DTE 244
CREDIT: 2
Semester: 2
Level: 200

OBJECTIVES

The course is to equip the students with essential knowledge and practical skills in:

- direct heat fastening techniques like welding, brazing and soldering
- Fabricating sheet materials.

WEEK	TOPIC	CONTENT / NOTES	ASSIGNMENT / DATE OF SUBMISSION
1,2 & 3	Oxy-acetylene gas welding equipment	Definition of welding, explanation of terms and hydrocarbon gases used. Sketching and labelling the gas welding equipment	Sketch and label the oxy-acetylene gas welding equipment and give the functions of the parts. Submission: week 3
4 & 5	Oxy-acetylene gas welding flames	Discussing and sketching types of flames, stating their applications. Describing the ignition of the flames on the blowpipe and gas welding techniques.	Neatly sketch the three types of flames produced by the gas-welding blowpipe, state and justify their applications. Submission: week 6
6,7 & 8	Arc and resistance welding	Definition and explanation of terms and symbols. Differentiation between arc, resistance and oxy-acetylene welding. Explanation of grades of electrodes used and defects in welding. Discussing safety precautions in welding.	Practice all three types of welding at the workshop. Weld two pieces of mild steel materials for an identified project. Explain possible defects likely to occur and how they could be prevented. Submission: week 14
9,10,11	Fabricating sheet metal	Explanation of types of sheet metal. Discussing the jointing systems: self-secured e.g. paned-down and knocked-up and non self-secured e.g. soft soldering. Other joints include: beading, grooved seam, wiring, flanging, swaging and jennying. Describing the various types of solder, fluxes and other materials.	Practicing self and non self-secured joints at the workshop. Preparing feasible identified projects involving these skills e.g. watering can. Submission: week 13

12,13,14	Hard soldering: Brazing	Defining brazing and its associated terms. Discussing techniques, materials, tools and equipment for brazing. Differentiating brazing from the other fastening techniques discussed earlier especially soft soldering in previous course. Carrying out brazing and silver soldering jointing systems on specified and appropriate metals.	Differentiate between soft and hard soldering and describe sequentially how to fasten two materials with a hard soldering joint. State real life applications of brazing.
15, 16	Revision and end of semester exam.	Summarizing course content.	Submission of course or project work with folios.

METHODOLOGY

The course is taught through discussion and practical activities. A final project as a coursework with its detailed drawing is submitted. The final project could involve skills from welding, soldering, sheet metal work or brazing. It could also in-cooperate more than one of the major skills. All theoretical and practical assignments carry 40% of the coursework (continuous assessment) whilst the end of semester examination carries 60%. Failure to take part in assignments or class exercises renders a student ineligible to take the end of semester examination.

REFERENCES

- Love, G. (1980). Theory & Practice of Metalwork; London & Edinburgh, Longman.
- Sackey, J.K.N. & Amoakohene, S.K. (1996). Motivate Series – Metalwork Technology, London & Basingstoke, Macmillan.
- Timings, R.L. (1991). Mechanical Engineering Craft Theory & Related Subjects: Vol 1&2, Singapore, Longman-Singapore.
- Willacy, M.D. (1989). Craft & Design in Metalwork, London, Hutchinson.